

ABSTRACT OF THE DISCLOSURE

A porous dielectric film for use in electronic devices is disclosed that is formed by removal of soluble nano phase porogens. A silicon based dielectric film having soluble porogens dispersed therein is prepared by chemical vapor deposition (CVD) or by spin on glass (S.O.G.). Examples of preferable porogens include compounds such as germanium oxide (GeO_2) and boron oxide (B_2O_3). Hot water can be used in processing to wet etch the film, thereby removing the porogens and providing the porous dielectric film. The silicon based dielectric film may be a carbon doped silicon oxide in order to further reduce the dielectric constant of the film. Additionally, the porous dielectric film may be treated by an electron beam to enhance the electrical and mechanical properties of the film.